

JSPS Core-to-Core Program
FY2015 Implementation Plan (Project No. : 23003)

Research Theme Forming research and educational hubs of medical physics
Duration of Project Apr.1, 2013 – Mar. 31 2016 (36 months)
Core Institution in Japan (Co-Chair) Osaka University
(Masahiko Koizumi)

Implementing Organizations

○ **Japan**

Japan	Core Institution	Osaka University	
	Co-Chair (name and title)	Masahiko KOIZUMI, MD, PhD. Professor	
	Cooperating Institutions	Osaka Medical Center for Cancer and Cardiovascular Diseases, Hyogo Ion Beam Medical Center, National Cerebral and Cardiovascular Center, University of Tokyo, Kyoto University, Juntendo University	Number of Cooperating Institutions 6

○ **Partner Countries**

United States	Core Institution	Indiana University	
	Co-Chair (name and title)	Indra J. DAS, PhD. Professor	
	Cooperating Institutions	Purdue University, University of Minnesota, California University, Texas University	Number of Cooperating Institutions 4

The Netherlands	Core Institution	The University of Groningen	
	Co-Chair (name and title)	Sytze BRANDENBURG, PhD. Professor	
	Cooperating Institutions	Paul Scherrer Institute, Karolinska Institute	Number of Cooperating Institutions 2

Objectives of Research Exchange (including the five years after the project finishes)

The number one killer disease in Japan is cancer, and the cancer control is a national problem. In this project, we interchange with researchers in European and American most advanced facilities, and promote the photon therapy and particle therapy on a worldwide scale. We also establish a research and education hub where young medical physicists get their training through the advanced research and development of the high-accuracy radiotherapy and particle therapy.

Japan leads the world in the field of particle therapy, but falls in training medical physicist. By this project, we learn the know-how about training for medical physicist, dispatch young researchers and students, and train young medical physicists to have international competitiveness.

At the five years after this project finishes, we will keep in touch with the core and cooperating institutions.

Results to the present

Up to the present, sixteen, three and twenty-three people (including faculty, student, medical physicist and radiation oncologist) had been sent to Indiana University (USA), Minnesota University (USA) and University of Groningen (the Netherlands), and they were working on the studies in collaboration with the corresponding researchers. They presented their results in overseas conferences (First Author: 18, Coauthor: 5). Papers on the collaborative researches has been published in journals (First Author: 10, Coauthor: 2).

It should be noted that many researchers having international competitiveness in the medical physics field have been nurtured by this project, because the young researchers and students sent overseas advanced their researches in collaboration with the cooperating scientists on their motive.

Summary of FY 2015 Exchange Plan

Joint Research

Researchers will carry out the collaborative research themes below.

- a. Development of the next generation particle radiotherapy device
- b. Dose calculation for high-accuracy radiotherapy
- c. Development of the next generation diagnostic devices
- d. The research of the image-guided adaptive radiotherapy, and radiotherapy to tumor with respiratory displacement
- e. Development of cancer information systems
- f. Research of particle radiobiological effectiveness

Seminar

1. "Osaka University - Indiana University Medical Physics Seminar", Anaheim CA, USA, Jul. 11, 2015

Researcher Exchanges

Three students will be sent to the core and cooperative institutions and will carry out the research themes a), c) and d).

Researchers and students will attend overseas conferences (PTCOG, World Congress, AAPM, ASTRO, etc.) will present their results.